

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1-71 (Withdrawn)

72. (Currently Amended) A method for ~~extraction and~~ analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte ~~a body fluid from or~~ through said area of skin by application of a transport force to said area;

~~collecting said body fluid; and~~

~~sensing the presence of said at least one analyte in the body fluid~~

receiving said at least one analyte in a sensing zone in communication with said area; and

continuously determining the quantity of said at least one analyte in said body fluid in said sensing zone.

73. (Canceled)

74. (Currently Amended) The method of claim 72, wherein said ~~step of extracting a body fluid from or through said area of skin comprises applying a~~ transport force ~~is~~ selected from the group consisting of physical forces, chemical forces, biological forces, vacuum, electrical forces, osmotic forces, diffusion forces, electro-magnetic forces, ultrasound forces, cavitation forces, mechanical forces, thermal forces, capillary forces, fluid circulation across the skin, electro-acoustic forces, magnetic forces, magneto-hydrodynamic forces, acoustic forces,

convective dispersion, photo acoustic forces, by rinsing body fluid off skin, and any combination thereof.

75. (Original) The method of claim 74, wherein said vacuum force is applied continuously.

76. (Original) The method of claim 74, wherein said vacuum force is applied discontinuously.

77. (Currently Amended) A method for analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte through said area of skin by application of a transport force to said area;

receiving said at least one analyte in a sensing zone in communication with said area; and
continuously determining the quantity of said at least one analyte in said body fluid in
said sensing zone;

wherein said transport force is selected from the group consisting of physical forces,
chemical forces, biological forces, vacuum, electrical forces, osmotic forces, diffusion forces,
electro-magnetic forces, ultrasound forces, cavitation forces, mechanical forces, thermal forces,
capillary forces, fluid circulation across the skin, electro-acoustic forces, magnetic forces,
magneto-hydrodynamic forces, acoustic forces, convective dispersion, photo acoustic forces, by
rinsing body fluid off skin, and any combination thereof; and

~~The method of claim 74,~~ wherein a material is placed between said vacuum force and said skin in order to maintain a surface configuration of said skin.

78. (Original) The method of claim 77, wherein said material is selected from the group consisting of mesh, membrane, and perforated metal.

79. (Original) The method of claim 77, wherein said vacuum force is generated by a device selected from the group consisting of mechanical, electro-mechanical, chemical, or electro-chemical.

80. (Original) The method of claim 74, wherein said electrical force is selected from the group consisting of iontophoretic, electro-osmotic, and electroporation.

81. (Original) The method of claim 74, wherein a gel is applied to said skin in order to encourage osmosis.

82. (Currently Amended) The method of claim 74, wherein said transport force is an ultrasound force and wherein said ultrasound force is applied to create a result, said result selected from the group consisting of ~~to~~ pumping body fluid and fluid components, levitating, activating gas bodies, producing cyclic impulse mechanical stress to the skin, creating microstreaming, increasing temperature, and setting up standing waves.

83. (Currently Amended) The method of claim 74, wherein a plurality of ultrasound-producing devices are used to create said ultrasound transport force.

84. (Original) The method of claim 83 wherein said a plurality of ultrasound-producing devices have at least one different operating characteristic.

85. (Original) The method of claim 84, wherein said operating characteristic is selected from the group consisting of frequency, intensity, and coupling media.

86. (Original) The method of claim 74, wherein said mechanical forces are applied by a device selected from the group consisting of a roller, a squeezer, a stretcher, a compressor, and a tensioner.

87. (Original) The method of claim 86, wherein said tensioner collects said body fluid in a cavity formed therein.

88. (Original) The method of claim 74, wherein said thermal forces are created by a source selected from the group consisting of electric, chemical, ultrasonic, and optical energy sources.

89. (Currently Amended) A method for analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte through said area of skin by application of a transport force to said area;

receiving said at least one analyte in a sensing zone in communication with said area; and
continuously determining the quantity of said at least one analyte in said body fluid in said sensing zone;

wherein said transport force is selected from the group consisting of physical forces, chemical forces, biological forces, vacuum, electrical forces, osmotic forces, diffusion forces, electro-magnetic forces, ultrasound forces, cavitation forces, mechanical forces, thermal forces, capillary forces, fluid circulation across the skin, electro-acoustic forces, magnetic forces, magneto-hydrodynamic forces, acoustic forces, convective dispersion, photo acoustic forces, by rinsing body fluid off skin, and any combination thereof; and

~~The method of claim 74, wherein temperature sensitive polymers are used to extract said at least one analyte body fluids.~~

90. (Currently Amended) The method of claim 72, wherein said step of receiving said at least one analyte ~~collecting said body fluid~~ comprises using a ~~collection~~ method selected from the group consisting of absorption, adsorption, phase separation, mechanical, electrical, chemically induced, capillary forces, and a combination thereof.

91. (Currently Amended) The method of claim 90, wherein said absorption ~~collection~~ method comprises receiving ~~collecting~~ said at least one analyte ~~body fluid~~ into a gel.

92. (Original) The method of claim 91, wherein said gel contains a captive enzyme.

93. (Currently Amended) A method for analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte through said area of skin by application of a transport force to said area;

receiving said at least one analyte in a sensing zone in communication with said area; and
continuously determining the quantity of said at least one analyte in said body fluid in said sensing zone;

wherein said step of receiving said at least one analyte comprises using a method selected from the group consisting of absorption, adsorption, phase separation, mechanical, electrical, chemically induced, capillary forces, and a combination thereof; and

~~The method of claim 90,~~ wherein said phase separation method comprises isolating said ~~body fluid~~ at least one analyte with an appropriate density immiscible fluid.

94. (Currently Amended) The method of claim 93, further comprising receiving ~~collecting~~ said at least one analyte ~~body fluid~~ into a conical chamber.

95. (Currently Amended) The method of claim 90 wherein a hydrophobic coating is applied to said skin prior to said step of extracting said at least one analyte ~~a body fluid~~ from said area of skin.

96. (Currently Amended) The method of claim ~~95~~ 75, wherein said at least one analyte ~~body fluid~~ is collected from said hydrophobic coating.

97. (Currently Amended) The method of claim 90, wherein said mechanical ~~collection~~ method comprises applying a force selected from the group consisting of vacuum, pressure, and acoustic forces.

98. (Currently Amended) The method of claim 90, wherein said electrical ~~collection~~ method comprises moving a charged object from said skin to a receiving ~~collecting~~ compartment using electrical forces.

99. (Currently Amended) A method for analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte through said area of skin by application of a transport force to said area;

receiving said at least one analyte in a sensing zone in communication with said area; and
continuously determining the quantity of said at least one analyte in said body fluid in
said sensing zone;

wherein said step of receiving said at least one analyte comprises using a method selected from the group consisting of absorption, adsorption, phase separation, mechanical, electrical, chemically induced, capillary forces, and a combination thereof; and

~~The method of claim 90,~~ wherein said chemical ~~collection~~ method comprises applying a hydrophilic gel to receive ~~collect body fluids~~ said at least one analyte.

100. (Currently Amended) A method for analysis of at least one analyte in a body fluid, comprising:

increasing a permeability level of an area of skin by applying low frequency ultrasound forces to said area;

extracting said at least one analyte through said area of skin by application of a transport force to said area;

receiving said at least one analyte in a sensing zone in communication with said area; and
continuously determining the quantity of said at least one analyte in said body fluid in
said sensing zone;

wherein said step of receiving said at least one analyte comprises using a method selected from the group consisting of absorption, adsorption, phase separation, mechanical, electrical, chemically induced, capillary forces, and a combination thereof; and

~~The method of claim 90,~~ wherein said capillary collection method comprises:

filling at least one capillary with a plurality of fibers; and

receiving ~~collecting~~ said at least one analyte ~~body fluid~~ in said at least one capillary.

101. (Currently Amended) The method of claim 72, wherein said step of continuously determining the quantity of said ~~sensing the presence of~~ at least one analyte comprises applying a

sensing method selected from the group consisting of electrochemical, optical, acoustical, biological, enzymatic technology, and combinations thereof.

102. (Currently Amended) The method of claim 72, wherein living cells are used to determine the quantity of said at least one ~~sense a concentration of an~~ analyte in said body fluid.

103. (Original) The method of claim 72, further comprising the step of providing an output for a user interface comprises providing an alarm that indicates an abnormal analyte concentration.

104. (Currently Amended) The method of claim 72, further comprising the step of providing an output for a user interface comprises providing ~~an~~ trend information.

105. (Original) The method of claim 72, further comprising the step of providing history information.

106. (Original) The method of claim 72, wherein said user output is downloadable.

107. (Currently Amended) A system for ~~extraction and~~ analysis of at least one analyte in a body fluid comprising:

a low frequency ultrasound transducer for increasing the permeability of an area of skin;
means providing an extraction transport force through said area ~~an extraction device for~~
~~extracting interstitial fluid from said area of skin;~~

a sensing zone in communication with said area into which said at least one analyte is
extracted by said transport force ~~a collection device for collecting said extracted interstitial fluid;~~
and

a sensing device in said sensing zone for continuously measuring ~~sensing the~~ quantity
~~presence of~~ said at least one analyte in said body ~~extracted interstitial~~ fluid.

108. (Currently Amended) The system of claim 107, further comprising a microcontroller for controlling at least one of said transducer, said means providing an extraction transport force ~~extraction device~~, ~~said collection device~~, and said sensing device.

109. (Original) The system of claim 107, further comprising a user output device.

110. (Original) The system of claim 108, further comprising a microcontroller for controlling said user output device.

111. (Canceled)

112. (Currently Amended) The system of claim 107, wherein said means providing an extraction transport force ~~extraction device~~ is a device that produces a force selected from the group consisting of physical forces, chemical forces, biological forces, vacuum pressure, electrical forces, osmotic forces, diffusion forces, electro-magnetic forces, ultrasound forces, cavitation forces, mechanical forces, thermal forces, capillary forces, fluid circulation across the skin, electro-acoustic forces, magnetic forces, magneto-hydrodynamic forces, acoustic forces, convective dispersion, photo acoustic forces, by rinsing said at least on analyte ~~body fluid~~ off skin, and any combination thereof.

113. (Canceled)

114. (Currently Amended) The system of claim 107, wherein said sensing device is a device that measures the amount ~~senses the presence~~ of an analyte by a sensing method selected from the group consisting of electrochemical, optical, acoustical, biological, enzymatic technology, and combinations thereof.

115. (Original) The system of claim 109, wherein said user output device provides information selected from the group consisting of trend information, history information, operating information, and combinations thereof.

116. (Original) The system of claim 115, wherein information from said user output device is downloadable to a computer.

117. (Currently Amended) A method for blood glucose determination comprising:
increasing a permeability of an area of skin by applying low frequency ultrasound forces to said area;

extracting glucose ~~interstitial fluid~~ from said area of skin;

receiving ~~collecting~~ said glucose ~~interstitial fluid~~ in a gel, said gel containing at least one glucose sensitive reagent that changes at least one characteristic of said gel when glucose is present; and

continuously monitoring a change in said at least one characteristic of said gel.

118. (Currently Amended) A system for blood glucose determination comprising:
a low frequency ultrasound transducer for increasing the permeability of an area of skin;
an extraction device for extracting glucose ~~interstitial fluid~~ from said area of skin;
a receiving ~~collection~~ device for receiving ~~collecting~~ said extracted glucose ~~interstitial fluid~~;

a gel in said receiving ~~collection~~ device;

at least one glucose sensitive reagent that changes at least one characteristic of said gel when glucose is present; and

a monitoring device for continuously monitoring a change in said at least one characteristic of said gel.

119. (Original) The system of claim 118, wherein the at least one glucose sensitive reagent is in said gel.